U.S. ENVIRONMENTAL PROTECTION AGENCY, REGION 2

February 20, 2020

BY ELECTRONIC MAIL

Robert Law, Ph.D.
de maximis, inc.
186 Center Street, Suite 290
Clinton, New Jersey 08809

Re: Re: Diamond Alkali OU4 - Lower Passaic River Study Area– Administrative Settlement Agreement and Order on Consent for Remedial Investigation/Feasibility Study (Agreement) CERCLA Docket No. 02-2007-2009

Dear Dr. Law:

The U.S. Environmental Protection Agency (EPA) conducted oversight and split sampling of the Cooperating Parties Group (CPG)'s current condition biota sampling in accordance with the "*Diamond Alkali OU4, Evaluation of the CPG Current Conditions Addendum to the QAPP – Fish and Crab Tissue Collection for Chemical Analysis"* prepared by Windward Environmental, LLC (and others) on behalf of the CPG. On January 30, 2020, EPA received a memorandum entitled, "*Passaic Current Conditions Biota Sampling – Lessons Learned from 2019 Sampling Effort*" prepared by Windward. EPA has the enclosed comments evaluations on this memorandum. In addition, EPA also has "lessons learned" to the 2019 sampling effort which are attached to this memo as Attachment 1.

In accordance with Section X, Paragraph 44(d) of the Agreement, EPA has enclosed an evaluation of CPG's "Lessons Leaned" with this letter. EPA would like to meet as soon as possible to prepare for the 2020 sampling event including QAPP revisions and obtaining permits in time to initiate sampling by early August 2020. If there are any questions or clarifications needed on EPA's enclosed comment evaluations, please contact me to discuss.

Sincerely,

Diane Salkie, Remedial Project Manager
Lower Passaic River Study Area RI/FS

Enclosure

623697

Cc: Zizila, F. (EPA)
Sivak, M. (EPA)
Hyatt, B. (CPG)
Potter, W. (CPG)

EPA COMMENTS

Passaic Current Conditions Biota Sampling – Lessons Learned from 2019 Sampling Effort

1. **Sample Numbers for Target Species** – Windward stated that a statistical power analysis of the 2019 biota tissue data will determine whether the composites collected to date have met the statistical target of being able to discern a minimum detectable difference (MDD) of 0.5. EPA expects CPG to perform such analysis, though it will have to be verified by EPA's statistician. Additionally, given the dates CPG has given EPA for anticipated tissue data finalization (mid-June), with a final report at some weeks after that, there will likely not be time to debate the numbers of target species prior to the initiation of field activities. CPG should be prepared to expend the full effort to collect and analyze the full target numbers agreed upon prior to the 2019 sampling event. Then, if changes to the required target numbers are defensible, EPA may agree to changes.

2. **Adequate Tissue Mass for Analysis** – EPA agrees that additional blue crab and white perch will have to be collected to meet the increased number of fish/crabs per composite necessary to meet analytical tissue mass requirements.

3. **Collection Methods** – Windward states that the reason for reduced crab numbers in the Passaic system is uncertain, adding the speculation of several potential causes (general low abundance, annual population fluctuation, regional stock abundance, river flow). EPA believes the primary reason crab catch was low was most likely that the 2019 biota sampling event started too late in the season, and the crabs had already left the system. A potential secondary reason for low crab numbers was likely the bait that was utilized (see EPA's attached lessons learned for detail).

    - EPA agrees with eliminating beach seining for the 2020 event, since a sufficient number of forage-sized fish (sunfish) were collected via trapping and electrofishing without seining in 2019.
    - EPA agrees that increasing electrofishing time will increase catch success (see EPA's attached lessons learned for detail).
    - EPA agrees with deploying more eel traps, though Windward should continue to use the minnow traps (see EPA's attached lessons learned for detail).
    - EPA agrees with incorporating hoop nets (with turtle excluder devices), and Windward should plan to deploy them at key locations in the river.
    - EPA does not agree with delaying the use of gillnets. In fact, EPA believes that more gillnets should be deployed, and EPA will work with the CPG and NJDEP on to a waiver allowing use of gillnets earlier than was allowed in 2019 (see EPA's attached lessons learned for detail). EPA does not believe that cutting back on minnow traps and gillnets and deploying more eel traps and the as-yet-untried hoop nets will yield the required target numbers.
    - Windward noted that the average water temperature during 2019 field activities was 70°-73°F, and that biota activity should not have been impacted. However, those temperatures reflect a steady drop from earlier in August. The lower temperatures, combined with shortening daylight hours, result in the migratory species (especially crabs) leaving the upper portion of the system by September. Sampling should begin in early August for 2020 (see EPA's attached lessons learned for detail).

ATTACHMENT 1

Current Conditions Biota Sampling
September 2019 - Lessons Learned from EPA Oversight

1. **Communications:** The "Diamond Alkali OU4, Evaluation of the CPG Current Conditions Addendum to the QAPP – Fish and Crab Tissue Collection for Chemical Analysis" prepared by Windward Environmental, LLC (Biota QAPP Addendum) stated that CPG would forward an electronic database each day, with the pertinent information related to the previous day's activities (species, numbers, size metrics, catch locations, gear used, dates/times, etc.). Instead, EPA received email updates irregularly that did not include all the pertinent information. The email summaries included total counts, followed by a summary of total counts each week. During the daily fish processing, CPG's field staff was observed populating a database with all the requested information. For 2020, EPA will expect the daily database with all information to be sent no later than noon the next business day.

2. **Personnel:** While the 2019 field personnel were appropriately experienced, the team was observed to be short-handed. For the 2020 event, two crews for fish collection (one for nets/traps, one for electrofishing), should be supplemented by a third crew to process fish. In the 2019 fish collection, it was necessary for the field crews to return to the staging area shortly after noon each day so that they could process the catch and prepare for the analytical lab pickup. Having a third crew dedicated to processing would allow the collection crews to fish for a full day, pass the catch on to the processing crew, and not have to put in more than 8-10 hours per day. The additional staff would allow for another 4 hours of collection effort per crew per day allowing for a more robust data set.

3. **Gear**:
   a. The gear utilized for the sampling effort was mostly appropriate. However, additional gear would likely yield additional target fish/crabs. While CPG put in effort to locate likely spots to place traps/gillnets/trotlines, there were miles between sampling locations. The deployment of traps/gillnets/trotlines in three or four more locations would likely increase the catch. Additionally, electrofishing the entirety of each of the two river reaches would likely yield significantly more fish than shocking the same smaller areas multiple times.

   b. Some of the traps/trotlines were temporarily lost during high tide because the buoys were not large enough to remain floating throughout the tide cycle (either the buoy lines were not long enough, or the current pulled the small buoy under). This necessitated leaving the trap/trotline until the tide receded and required multiple trips to retrieve. Larger buoys (and longer lines) should be used on all gear that is left in place. Additionally, the rope used to tie the buoys to the traps broke in several instances, losing the trap, so a stronger buoy line is recommended.

   c. The hooks utilized for the trotlines appeared to be too large. The QAPP specified hook sizes 4 and 6. The hooks used on the trotlines appeared to be 4/0. There are two measuring systems for hooks, with a size 4 hook larger than a size 6 hook, but a 4/0 hook smaller than a 6/0 hook. More importantly, size 4 and 6 hooks are significantly smaller than 4/0 and 6/0 hooks. Hook sizes for eels and catfish, particularly the target-sized fish,

should probably be smaller (you can catch large fish on small hooks, but it is a lot harder to catch small fish on large hooks). In 2019, only 2 eels (2% of all eels) and 17 catfish (24% of all catfish) were caught on trotline hooks, but in 2009, 21 eels (84% of all eels) and 18 catfish (60% of all catfish) were caught on trotlines.

4. **Bait**
   a. The trotlines were baited with chicken livers and balls of catfish dough. The prepared baits in some cases appeared to be too large (and on the large hooks) for the small target fish. Larger baits may be preferable for recreational fishing to catch larger fish, but the target size range for this project is small. Smaller baits (on smaller hooks) would likely yield more fish. However, since catfish dough is designed to dissolve in water (releasing attractant), the larger dough balls take longer to dissolve, and are acceptable. The chicken liver baits should be small enough for small fish to bite. Because dough balls dissolve and chicken livers tend to lose their attractive oils quickly, the trotline baits are significantly less attractive (or gone) after a few hours. EPA recommends the inclusion of cut-bait (e.g., menhaden were plentiful in 2019), which will last overnight may increase trotline success.

   b. The team started the event baiting eel and crab traps with cat food, which is fine for forage fish, but is not the optimal bait for eels or crabs. The team added raw chicken to the traps about halfway through the second week of the three-week event and allowed the chicken to rot in the traps to increase the smell, and the chicken (at least initially) increased the eel catch. However, the preferred bait for commercial eel fishermen is horseshoe crabs (NJDEP placed a moratorium on horseshoe crab harvest in 2008, but they can be purchased in other states [NY and DE] and used as bait in NJ). Another preferred bait for eels is menhaden (or other oily fish). Therefore, a combination of horseshoe crab (if available), menhaden, and raw chicken should be used in the eel traps in 2020. Catfish dough (stink-bait) and cat food can also be included.

   c. The preferred bait for commercial blue crab fishermen in NJ is menhaden (or other oily fish). Crabs also prefer fresh bait, so the bait should be replaced at least every other day. While chicken is used for recreational crabbing, it is generally not as effective as fish. The 2019 event collected 43 of the 60 crabs (72%) using the gillnets, because the crabs were feeding on the dead fish in the nets. Only 10 of the 60 crabs (17%) were collected from the crab traps in 2019. Therefore, a combination of fresh menhaden, chicken, and cat food should be used for crab traps in 2020.

5. **Species**
   a. The Biota QAPP Addendum should be revised to include all catfish species (white, channel, bullhead, etc.) to maximize the potential for obtaining target numbers. During the 2019 event, the electrofishing team caught 20+ bullheads one evening and threw them back because they were not target species, without consulting EPA. Conversely, the team was not as selective with the sunfish species, though only pumpkinseed, redbreast, and bluegill were specified in the QAPP. For the 2020 event, all catfish species will be retained. After fish collection is complete, EPA and CPG can discuss which species, or species mix, will be submitted for analysis.

b. Because of the analytical tissue mass requirements and the sizes of the biota collected, the 2019 compositing scheme of three white perch and three blue crabs per composite was insufficient, and the composite schemes had to be revised to five perch and five crabs per composite. While CPG had sufficient extra perch to prepare 12 larger composites, there were only enough crabs to prepare 8 larger composites. The 2020 biota event will require revising the number of organisms per composite, and therefore, the total number of target organisms per river reach.

6. **Sampling Event Dates** – Blue crabs are present in the river system during the summer. The 2019 biota event was not started until September 9th and a significant portion of the crab population may have already migrated out of the upper reaches of the river. EPA requested that event be initiated in August. The 2009 biota event was started August 11th and 97 crabs were collected in Reach A and 41 in Reach B; in 2019, 57 crabs were collected in Reach A and 3 in Reach B. The 2020 biota event should be initiated in early-mid August. For 2020, EPA will work with the CPG and NJDEP on a waiver allowing for gillnet sampling earlier than was allowed in 2019.